Ex15C NOTES

Now we add a few more complexities to what we did in Ex15B. These are

- BACKWARD SCANNING → we did forward scanning to give earliest start times
- & CRASHING (later!!)

→ needed to compute the critical path analysis

→ BACKWARD? start at the end and work backward .... makes sense ...

This gives the LATEST START TIME (LST)

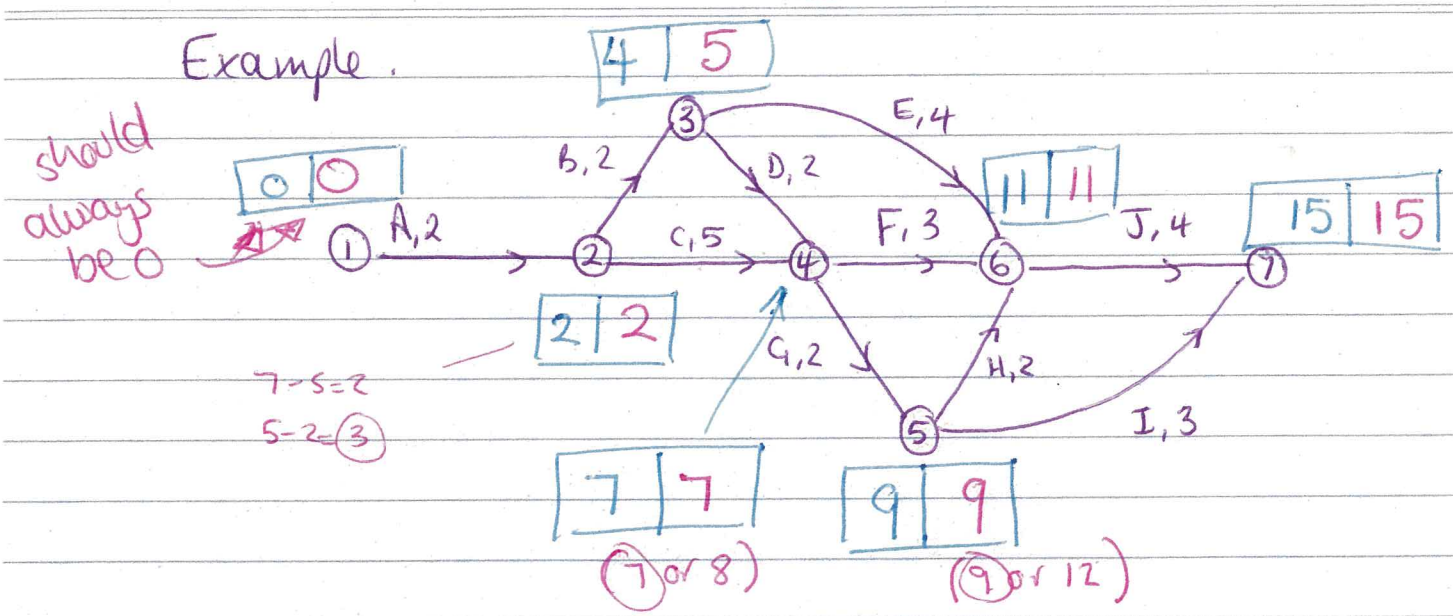
So going forward (FORWARD SCANNING) gives earliest start times and going backward (BACKWARD SCANNING) gives latest start time.

So this explains what we do with the right hand side of the boxes !!

OK dokey, Mrs V, let's see how this works ... ☺

11-4=7
7-2=5

Example.



For this graph, determine EST & LST for each event. (Blue and pink have been added in after)

1) EST, remember A has no predecessors so will be starting at 0.

B & C can both start at time 2 (0+2)
Then work your way around remembering to take the LARGEST number if more than 1 option

Node (6) → choose between 9+2=11 and 4+4=8
↘ larger one

2) LST, start at node (7)
15 is the earliest finish time for the series of activities, so we start with that.

Go back to node (6)
LST = 15-4
=11

Go back to node (5) ← must consider the 2 paths H & I
along H LST = 11-2 along I LST = 15-3
=9 take the smaller =12

So opposite to what you do for FORWARD SCANNING!

Keep working along, until each box filled in.

Check that my numbers make sense to you

EARLIEST FINISHING TIME (EFT)

This does not come directly from the boxes we have just filled in.

You work out from:

$$EFT = EST + T$$

eg activity F (from previous page)

$$EFT_F = EST_F + T_F$$
$$= 7 + 3$$
$$= 10$$

FLOAT TIME

Looking at this EFT of 10, compare to the EST for the next activity, J. J has an EST of 11.

This tells us there is some 'slack' or 'float' in when F can happen of 1 hour

$$\text{Float time}_F = LST_J - EST_F - T_F$$
$$= 11 - 7 - 3 = 1$$

Does event I have any slack?

$$\text{Float time}_I = LST_{\substack{\text{next}\\\text{event}}} - EST_I - T_I$$

(so here it is the finish time as it is the last step)

$$= 15 - 9 - 3$$
$$= 3$$

So, yes event I has a float time of 3 hours.

If an event has NO FLOAT TIME it is part of the critical path (as mentioned earlier)

So by checking float times you can see critical path is:

A - C - E - H - J